Work Order ID 75629

October-27-11 11:35:03 AM

75629

Item ID: D6002-115 **Accept** *N900040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Crosstube Material

Start Date: 27/10/2011 **Start Qty:** 20.00 *20*

Required Date: 28/02/2013 **Req'd Qty:** 20.00 *20*

Reference:

Cust Item ID:

Customer:

Approvals: **Process Plan:** MLJ **Date:** 11/10/27 **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr: D6002	Revision Nbr: Rev A								
100	PURCHASING	0.00							
100 Purchasing	**Memo**	0.00				CL	11/11/03	20	
Purchasing	Issue P/O 15345 a) Extrude as per Dwg D6002b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9or QQ-A-200/11) seamless aluminum tubec)Minimum ultimate tensile strength = 77 ksid)Minimum tensile yield strenght=66 ksie)Material certification								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110 Packaging	**Memo**	0.00				[illegible]	11/10/27	20	
Packaging	Ensure material certification is attached								
120	QC6- Inspect dimensions to drawing	0.00 — see attached Mat. Inspect Sheet.							
120 QC	**Memo**	0.00							
Quality Control	Ensure Material certification comply to Dwg D6002	DAS 16 8-02 12/11/02							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item ID: D6002-115 **Accept** *N900040100* **Setup Start** *NS1*
Revision ID: **Stop** *NS2*
Item Name: Crosstube Material
Start Date: 27/10/2011 **Start Qty:** 20.00 *20*
Required Date: 28/02/2013 **Req'd Qty:** 20.00 *20*
Cust Item ID:
Customer:
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Chemical Conversion Coat per QSI005 4.1	0.00							
130									
HandFinish	**Memo**	0.00				N/A			
Hand Finishing								12-11-5	
140	Identify as per dwg & Stock Location: LG	0.00							
140									
Packaging	**Memo**	0.00							
Packaging								mm. C 12/11/5	
150	QC21- Final Inspection - Work Order Release	0.00							
150									
QC	**Memo**	0.00							
Quality Control								12/11/6	

MCJ 12-11-05

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

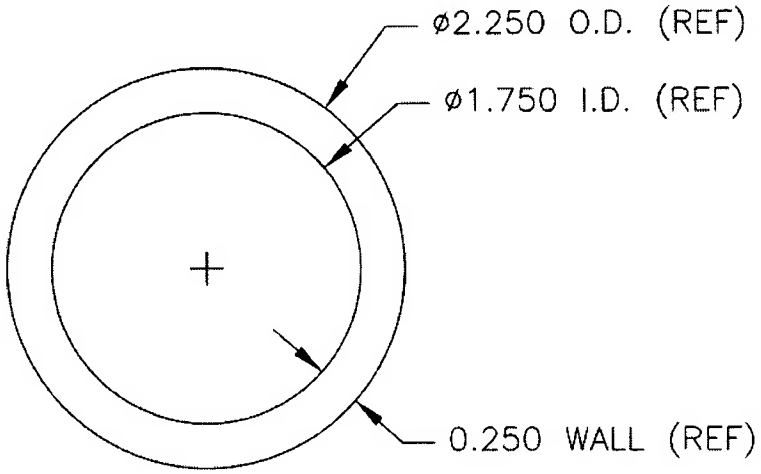
DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CP	CP		
CHECKED	APPROVED	DRAWING NO.	REV. A
		D6002	SHEET 1 OF 1
DATE		TITLE	SCALE
00.11.22		CROSSTUBE MATERIAL	1:1

A	00.11.22	NEW ISSUE

SPECIFICATION CONTROL DRAWING

RELEASED
00.11.24

STOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 75629 M.L.J
11/10/27



NOTES

1) D6002–XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 115" LONG TUBE: D6002–115

2) MATERIAL: 2.250 OD x 0.250 WALL 7075–T6/T6511 (WW–T–700/7 OR QQ–A–225/9 OR QQ–A–200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:
O.D.: ± 0.006 MEAN (±0.012 INCLUDING OVALITY)
WALL: ±0.008 MEAN (±0.025 INCLUDING ECCENTRICITY)
LENGTH: XXX +0.125/–0.000
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO15345

Purchase Order Date 11/03/11
PO Print Date 12/07/11

Order From : VU-ALU001

ALUMINIUMWERK UNNA AG
630 3033 SOUTH PARKER RD
AURORA, CO 80014
USA

Contact Name		**Buyer**	Chantal Lavoie
Vendor Phone	303 755 5672	**Requisition Nbr**	
Vendor Fax	303 755 5936	**Tax Resale Nbr**	10127-2607
Vendor Account Nbr		**Terms**	Net 30
		Currency	USD
		FOB	Destination-Collect

Ship To : DART AEROSPACE LTD 1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

REVISED

Line Nbr	Reference / Revision ID / Vendor Part Number	Description / Mfg ID	Req Date / Taxable	Req Qty / Unit of Measure	Ship Method	Unit Price	Extended Price
1	D6002-115P	Crosstube material	11/28/12 Yes	20.00 Each		$307.0000	$6,140.00
		Special Inst:	AS PER DWG D6002 REV. A B75629 MATERIAL: 7075-T6/T6511 AS PER QQ-A-700/7 OR QQ-A-200/11 SEAMLESS ALUMINUM TUBE MINIMUM ULTIMATE TENSILE STRENGTH = 77 KSI MINIMUM YIELD TENSILE STRENGTH = 66 KSI SIZE: 2.250" OD X 0.250" WALL X 115" LONG				
2	D6009-129P	Crosstube Material	11/28/12 Yes	20.00 Each		$996.0000	$19,920.00

Rec'd 12/12/11

No substitution or deviation without consent.
Certificate of Conformity or Material Certification required when applicable

Change Nbr: 4 **Change Date:** 12/07/11

ALUnna

Packinglist ALUnna AG

ALUnna ref. no.	44988/100
Customer PO.	Po. 15345
Date:	10.01.12

Boxmarking:

Dart Aerospace
Po. 15345, D6002-115
Made in Germany Dest.: Hawkesbury Ont, Canada

We hereby declare that the wooden packing material are totally free from bark and apparently free from live plant pests

										Boxdimension							
Item no.	Box no.	OD (inch)	ID (inch)	Wall (inch)	Net Weight (lbs)	Tare lbs	Gross Weight	Pieces	lengths (ft)	Lengths (inch)	Width (inch)	height (inch)	Cast. / Heat No. Top	Pcs.	Cast. / Heat No. Middle	Pcs.	Cast. / Heat No. Bottom
100	1	2,250	1,750	0,250	373	220	593	20	9,58	151,575	22,441	22,441			8241/802447	20	
					373	220	593	20				1,251 m³					

S:\VERSAND\USA_Packliste\44988_100

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde: *Client:* Dart Aerospace Ltd.

1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Zeugnisnummer: *Cert No.: / No. du certificat:* 1285/12

Bestellnummer: *Order No. / No. de commande* PO 15345

Auftrag: *Our Reference/Notre Reference:* 44988/100

Produkt: *Product / Produit:* Rohre nahtlos gepresst *Tubes seamless extruded*

Spezifikation: *Specification:* AMS - QQ - A - 200/11; Spezifikation Dart Aerospace D6001

Werkstoff: *Alloy/Alliage:* 7075 Ersatz

Zustand: *Temper/État* T6511

Abmessung *Size / Dimension* 2,250 INCH x 1,750 INCH x 0,250 INCH x 115,000 INCH
D6002-115 2.250 X 0.250 X 115

Kennzeichnung *Marking/Marquage:* ALUnna - CERT NO. 1285/12 - 7075 - T6511 - CAST NO. 8241 - QQ - A - 200/11E - 2.250" OD x 0.250" WALL - HEAT LOT NO. 802447 - ALUNNA ORDER CONF. NO. 44988/100-1 - PO 15345

Lieferung *Delivered Material / Matérial délivre:*

pcs.	lbs
20	373

Country of Manufacture: Germany
Products are in accordance with applicable RoHS

1. Chemische Analyse *Chemical Analysis / analyse chimique*

Elemente ohne Grenzwerte: einzeln max. 0,05 %, insgesamt 0,15 %

Charge/ Cast No.		Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
	min.			1,2		2,1	0,18	5,1						
	max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20					
8241/12		0,082	0,170	1,415	0,092	2,179	0,205	5,908	0,038	0,003	0,0263	0,0001	0,0015	0,0001

Hydrogen content: 0,15 **ccm/100 g Al** Elements without indication < 0,01 % **country of melt manufacturer: Germany**

2. Mechanische Eigenschaften *Mechanical Properties / Valeurs Mécaniques*

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat Lot No.
min.	77,0	66,0	7,0			
max.						
1	80,475	73,225	12,0			802447

RMS: outside 25 - max. 13,0 µ"

Ergebnis der Prüfungen: Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results: We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

Resultats: Nous confirmons que la livraison a été controlée et correspond avec les conventions faites à la réception de la commande

TaschkeD

18.09.2012

Certified acc. DIN EN ISO 9001:2008 and DIN EN 9100:2003
valid until 2013-11-10
Cert.- Reg. No.: 001959 QM08; 001959 ASH

ALUnna

Abnahmebeauftragter

EXTRUSION INSPECTION SHEET

		SIDE A	SIDE B					ULTRA SONIC MEASURMENTS				
TUBE #	TOTAL LENGTH	DIA two readings	DIA two readings	INSIDE DIA	wall thickness measured w/vern	Strightness at 12"in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4
DWG	115.00"	2.250"		1.750"	0.250"	0.010"	N/A	Middle	N/A			
1	115.00"	2.243"/2.250"	2.244"/2.247"	1.738"	0.254"/0.250"	0.0045"	N/A	Middle	0.255"	0.246"	0.254"	0.263"
2	115.00"	2.244"/2.253"	2.244"/2.251"	1.740"	0.252"/0.259"	0.001"	N/A	Middle	0.255"	0.260"	0.257"	0.253"
3	115.00"	2.246"/2.253"	2.240"/2.244"	1.737"	0.251"/0.257"	0.0035"	N/A	Middle	0.258"	0.254"	0.252"	0.256"
4	115.00"	2.243"/2.249"	2.244"/2.251"	1.735"	0.255"/0.247"	0.0025"	N/A	Middle	0.249"	0.257"	0.262"	0.255"
5	115.00"	2.243"/2.249"	2.248"/2.251"	1.732"	0.252"/0.259"	0.0065"	N/A	Middle	0.255"	0.252"	0.257"	0.261"
6	115.00"	2.248"/2.257"	2.247"/2.255"	1.736"	0.249"/0.266"	0.0025"	N/A	Middle	0.259"	0.261"	0.252"	0.251"
7	115.00"	2.247"/2.244"	2.247"/2.249"	1.736"	0.244"/0.256"	0.004"	N/A	Middle	0.264"	0.256"	0.251"	0.255"
8	115.00"	2.243"/2.248"	2.243"/2.249"	1.731"	0.244"/0.265"	0.0075"	N/A	Middle	0.252"	0.254"	0.260"	0.257"
9	115.00"	2.248"/2.245"	2.246"/2.251"	1.738"	0.247"/0.256"	0.003"	N/A	Middle	0.256"	0.250"	0.252"	0.261"
10	115.00"	2.247"/2.251"	2.249"/2.251"	1.738"	0.253"/0.259"	0.0025"	N/A	Middle	0.255"	0.261"	0.256"	0.251"
11							N/A	Middle				
12							N/A	Middle				
13							N/A	Middle				
14							N/A	Middle				
15							N/A	Middle				
PART # D6002-115		P/O# 15345			BATCH # B75629			Notes: